IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Storer *et al.*	Confirmation No.:	2099
Serial No.:	10/735,408	Art Unit:	1623
Filed:	December 12, 2003	Examiner:	G. Krishnan
For:	PROCESS FOR THE PRODUCTION OF 2'-BRANCHED NUCLEOSIDES	Attorney Docket No: (CAM:	11874-027-999 417451-999027) IDX 1024

DECLARATION UNDER 37 C.F.R. 1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Adel M. Moussa, Ph.D., declare and state that:

1. I have seventeen years of experience in the discovery, research and development of pharmaceutical agents, including antiviral agents;

2. I have received my **Ph. D.** in **organic chemistry** from **Northeastern University,** and subsequently completed postdoctoral research at **Northeastern University**

3. I have served as **Research Scientist** at **Covalent Associates** from **1991-1993**

   I have served as **Senior Scientist** at **Pharm Eco Laboratories** from **1993-1997**

   I have served as **Group Leader** at **Pharm Eco Laboratories** from **1997-2000**

   I have served as **Associate Director** at **Johnson Matthey, PLC** from **2000-2002**

4. I am currently employed as **Vice President of Chemical Development** at Idenix Pharmaceuticals, Inc.; Joined Idenix in March of 2002.

5. I am a named co-inventor in the above-referenced patent application;

6. I have read and understood the Office Action dated January 9, 2008 ("Office Action") for the above-referenced application;

7. I have read and understood the references cited by the Examiner in the Office Action;

8. As shown below, a number of experiments ("the Experiments") were performed, according to the following procedure:

   D-fructose is dissolved in degassed, deionized water. Solid calcium oxide is added to the solution in portions over a period of five to sixty-five minutes. The mixture is stirred for about twenty to twenty-six hours. Carbon dioxide gas is bubbled through the mixture for about one to five hours, or until the pH of the solution is about seven. The resulting solid is filtered, the filtrate treated with oxalic acid until the pH of the solution is about two to three, and the mixture stirred overnight at 45-50°C. The mixture is then evaporated under reduced pressure to remove a majority of the water while still leaving an aqueous mixture. Sodium chloride and tetrahydrofuran is added to the mixture and stirred for approximately thirty minutes. The organic and aqueous layers are separated and the aqueous layer treated with fresh tetrahydrofuran, stirred ten minutes. This process is repeated two to three times, and the combined organic layers are stirred with magnesium sulfate for approximately thirty minutes. The mixture is filtered and the magnesium sulfate washed with tetrahydrofuran. The solvent is removed under reduced pressure and the product triturated with acetone. The resulting precipitate is washed with acetone and dried under high vacuum to obtain the 2-C-methyl-D-ribonolactone product.

9. The following experimental results were obtained from the Experiments using the following molar ratios at the following reaction times, wherein the "reaction time" is defined by the time between (1) the initial addition of solid calcium oxide to the D-fructose solution, and (2) the addition of carbon dioxide:

Molar Ratio (CaO(s) : D-fructose)	**Reaction Time** (hours)	**Product Yield**
8 : 1	22.25 hours	low, not isolated
4 : 1	20.5 hours	13.4 %
2 : 1	22.25 hours	13.6 %
1.5 : 1	26.5 hours	13 %
1.2 : 1	23.5 hours	11.8 %
1 : 1	25.25 hours	9 %
0.75 : 1	23 hours	2 %

10. I supervised the Experiments, which were performed, in whole or in part, by Narayan Chaudhuri, a co-inventor in the above-referenced application;

11. It is both unexpected and surprising that the Experiments, wherein molar ratios of calcium oxide to D-fructose of 4 to 1, 2 to 1, and 1.5 to 1 gave higher product yields than the corresponding calcium hydroxide process described in BeMiller, *et al.*, "Methods in Carbohydrate Chemistry," Vol. II, pp. 484-85 (1963) ("BeMiller"), wherein an approximate 10 % product yield was obtained;

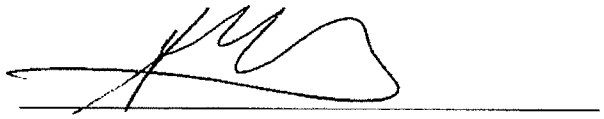
12. Is is both unexpected and surprising that the use of calcium oxide in place of calcium hydroxide in the Experiments provided higher product yields in significantly shorter reaction times than that the process described in BeMiller, which teaches a reaction time of 6 to 8 weeks;

13. The Experiments surprisingly and unexpectedly provided crude product that was easier to purify with respect the process of BeMiller, which requires the use of an ion exchange column;

14. The unexpected, surprising results described above provide an improved method for large-scale production of a 2-C-methyl-D-ribonolactone product because of the improved product yields, shorter reaction times, significantly higher through-put

(higher loading ratios) and ease of purification as compared to the processes described in the references cited by the Examiner in the Office Action;

15. I, Adel M. Moussa further declare that all statements made herein are of my own knowledge to be true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent that may issue there from.



ADEL M. MOUSSA

07-07-2008

Date